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(54) **AMIDE-BASED CATIONIC LIPIDS**

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This patent is subject to a terminal disclaimer.

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(52) **U.S. Cl.** **564/153**; 554/35; 554/36; 554/51; 554/52; 562/561; 562/563; 564/159; 564/197

(58) **Field of Search** 564/153, 159, 564/197; 562/561, 563; 554/35, 36, 51, 52

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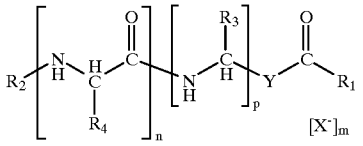
(57) **ABSTRACT**

The present invention provides novel amide-based cationic lipids of the general structure:



or a salt, or solvate, or enantiomers thereof wherein; (a) Y is a direct link or an alkylene of 1 to about 20 carbon atoms; (b) R_1 is H or a lipophilic moiety; (c) R_2, R_3, and R_4 are positively charged moieties, or at least one but not all of R_2,R_3, or R_4 is a positive moiety and the remaining are independently selected from H, an alkyl moiety of 1 to about 6 carbon atoms, or a heterocyclic moiety of about 5 to about 10 carbon atoms; (d) n and p are independently selected integers from 0 to 8, such that the sum of n and o is from 1 to 16; (e) X^- is an anion or polyanion and (f) m is an integer from 0 to a number equivalent to the positive charge(s) present on the lipid; provided that if Y is a direct link and the sum of n and p is 1 then one of either R_3 or R_4 must have an alkyl moiety of at least 10 carbon atoms.

The present invention further provides compositions of these lipids with polyanionic macromolecules, methods for interfering with protein expression in a cell utilizing these compositions and a kit for preparing the same.

15 Claims, 6 Drawing Sheets